

- 1993. "Marine shells" in L. W. Sørensen and D.W. Rupp, *The Land of the Paphian Aphrodite*, Vol. II: *The Canadian Palaipaphos Survey Project. Artifact and Ecofactural Studies* (= SIMA, Vol. CIV:2) (Göteborg), 207-9.
- REESE, D.S., MIENIS, H. K. and WOODWARD, F. R. 1986: "On the trade of shells and fish from the Nile River", *BASOR* 264, 79-84.
- REESE, D.S and SEASE, C. 1993: "Some previously unpublished engraved *Tridacna* shells", *JNES* 52:2, 109-28.
- ROBINSON, D. M. 1933: *Mosaics, Vases, and Lamps of Olynthus found in 1928 and 1931* (= *Excavations at Olynthus*, Part V) (Baltimore, London, Oxford).
- 1942: *Necrolynthia. A study in Greek burial customs and anthropology* (= *Excavations at Olynthus*, Part XI) (Baltimore, London, Oxford).
- STARR, R.F.S. 1939: *Nuzi* (Cambridge. Harvard University Press).
- STUCKY, R.A. 1974: "The engraved *Tridacna* shells", *Dedalo* 19, 1-109.
- TORNARITIS, G. 1987: *Mediterranean Seashells. Cyprus* (Nicosia)
- WHEELER, A. 1979: "The fish bones", in G. Barker, "Economic life at Berenice", in J.A. Lloyd (ed.), *Excavations at Sidi Khrebish (Berenice)*, Vol. 2 (= *Supplement to Libya Antiqua* 5.2) (Tripoli), 25-6.
- WHITCOMB, D. S. 1985: *Before the roses and nightingales. Excavations at Qasr-i Abu Nasr, Old Shiraz* (New York).

Η ΚΥΠΡΟΣ ΚΑΙ Ο ΠΕΡΣΙΚΟΣ ΚΟΛΠΟΣ ΚΑΤΑ ΤΗΝ ΕΛΛΗΝΙΣΤΙΚΗ ΚΑΙ ΡΩΜΑΪΚΗ
ΠΕΡΙΟΔΟ: Η ΠΕΡΙΠΤΩΣΗ ΤΗΣ PINCTADA MARGARITIFERA

(Περίληψη)

Κατά τη διάρκεια της δεύτερης και πρώτης χιλιετηρίας π.Χ., διακοσμημένα κοχύλια της οικογένειας *Tridacna*, κυκλοφορούσαν σε όλη την Εγγύς Ανατολή και τη Μεσόγειο. Για λόγους που δεν έχουν ακόμη εξακριβωθεί, κατά την Ελληνιστική και Ρωμαϊκή περίοδο, τη θέση της *Tridacna* πήρε ένα άλλο κοχύλι, κι' αυτό από την Ερυθρά Θάλασσα/Περσικό Κόλπο, η *Pinctada Margaritifera*. Το κοχύλι αυτό, συνήθως με εγχάρκτα διακόσμηση, χρησιμοποιήθηκε κυρίως σαν κτέρισμα, αλλά υπάρχουν και λίγα παραδείγματα από κατοικίες. Η εξάπλωσή του ήταν ακόμη μεγαλύτερη από αυτή της *Tridacna*, και σ' αυτό η Κύπρος έχει τη μερίδα του λέοντος, αφού εδώ έχουν βρεθεί περισσότερα παραδείγματα παρά σ' οποιαδήποτε άλλη περιοχή του αρχαίου κόσμου. Η παρούσα ανακοίνωση θα ασχοληθεί με το κυπριακό υλικό και θα εξετάσει κατά πόσον αυτή η πληθώρα παραδειγμάτων μπορεί να ερμηνευτεί ως αποτέλεσμα της γεωγραφικής θέσης της Κύπρου και των εμπορικών οδών της Μεσογείου.

Evidence for Roman Ports, Harbours and
Anchorage in Cyprus

John R. Leonard

INTRODUCTION

Roman Cyprus is traditionally characterized by modern historians as a somnolent provincial backwater, removed from military disputes, generally free from political intrigue, and largely devoid of Roman citizenry (Mitford 1980, 1295-97, 1345-46, 1383; Hauben 1987, 213; Potter, forthcoming).¹ The island's apparent tranquility and, according to Sir George Hill, lack of a history under Roman government could inspire such an impression, particularly when considering the island from within the context of the larger Roman Empire (Hill 1940, 244). Life in provincial Cyprus understandably pales against the well-documented imperial and urban concerns of ancient Rome.

Examination of the rich archaeological record of Roman Cyprus provides a less Italo-centric perspective. The study of Roman Cypriot harbours, in particular, testifies to the island's well-travelled coastlines, far-reaching economic connections, and vital maritime culture.² Roman Cyprus, at least along the coastal belt, seems to have possessed an active, economically astute population.³ The island served as a regular link in Mediterranean trade, and her shores as coastal crossroads.

Roman coastal sites, such as Dreamer's Bay on Akrotiri Peninsula and Maniki south of Cape Drepanum (Fig. 1), are littered with sherds of the local Cypriot Red Slip ware, a successful and calculated imitation of popular African trade goods.⁴ Anchorages, such as

1. See Mitford's comment *inter alia* that Cyprus lay on no important sea-routes (1980, 1297). Hauben, in considering Cyprus from a naval historical perspective, states, "the island played a pivotal role in the maritime affairs of the empires of Antiquity...[but] under Roman rule when it had lost all strategic interest for the occupant, Cyprus' maritime role was practically reduced to nought" (1987, 213).
2. The study of Cypriot harbours described in this paper has been undertaken as doctoral research. Harbour sites in the text and figures will be discussed in full, including the bases for their identification, in the complete dissertation. I would like to express my gratitude to A. Papageorghiou, M. Louloupis, and D. Christou, past and present Directors of the Department of Antiquities of Cyprus, for their kind, continuous support of this extended study, and to the Trustees of the Cyprus American Archaeological Research Institute for the Pacific Scientific Fellowship under the auspices of which the project was initiated in 1989. Many individuals since the study's inception have generously provided their guidance and assistance, to all of whom I extend my heartfelt appreciation, particularly S. and H.W. Swiny, W.G. Dever, V. Karageorghis, D. Michaelides, J. Bayada, S. Hadjisavvas, S.C. Fox, G. Vincent, N. Demetriou, M. Stavrou, L. Telemachou, A. Sacorafos, E. Moustoukki, S. Hartmann, J. van der Poste, R. Christodoulou, the students and volunteers who labored at *Kioni* and Paphos, and my colleagues and friends both in Cyprus and abroad enumeration of whom here cannot be undertaken. Special thanks lastly go to my collaborators, at *Kioni* J. Fejfer, T. Bekker-Nielsen, and the late H.E. Mathiesen, and at Paphos R.L. Hohlfelder, working with whom has been a pleasure and an honour. Illustrations were kindly prepared by S.C. Fox, with final adjustments by S. Hartmann.
3. Mitford in separate comments allows that Roman Cyprus was seemingly not unprosperous, and that the island had hidden powers, which were "abruptly revealed by her assertion of a relative independence in the mid-4th century..." (1980, 1295, 1383).
4. Maniki has been the subject of an underwater survey discussed below (Giangrande *et al.* 1987); for results of ceramic analyses, see: Morris, Peatfield 1987. For Late Roman Cypriot Red Slip and the earlier local imitation, Cypriot Sigillata, see Hayes 1967, 1972.

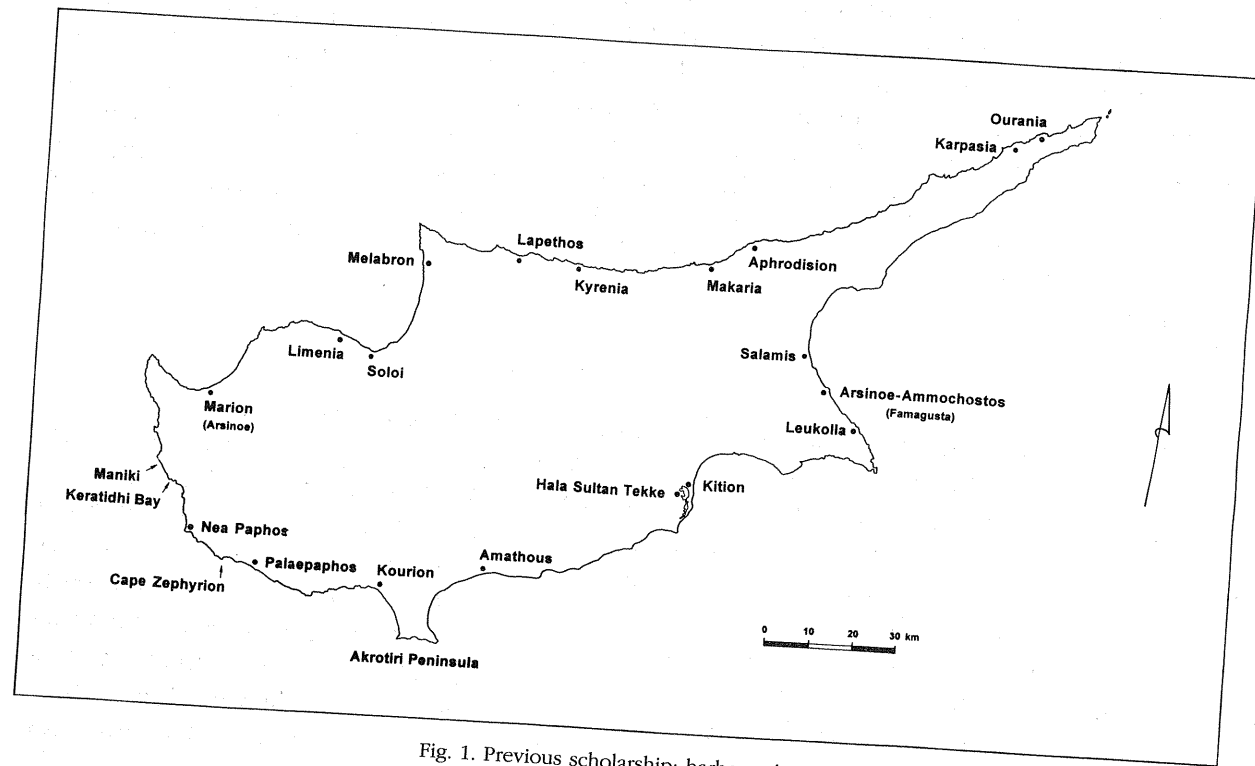


Fig. 1. Previous scholarship: harbour sites.

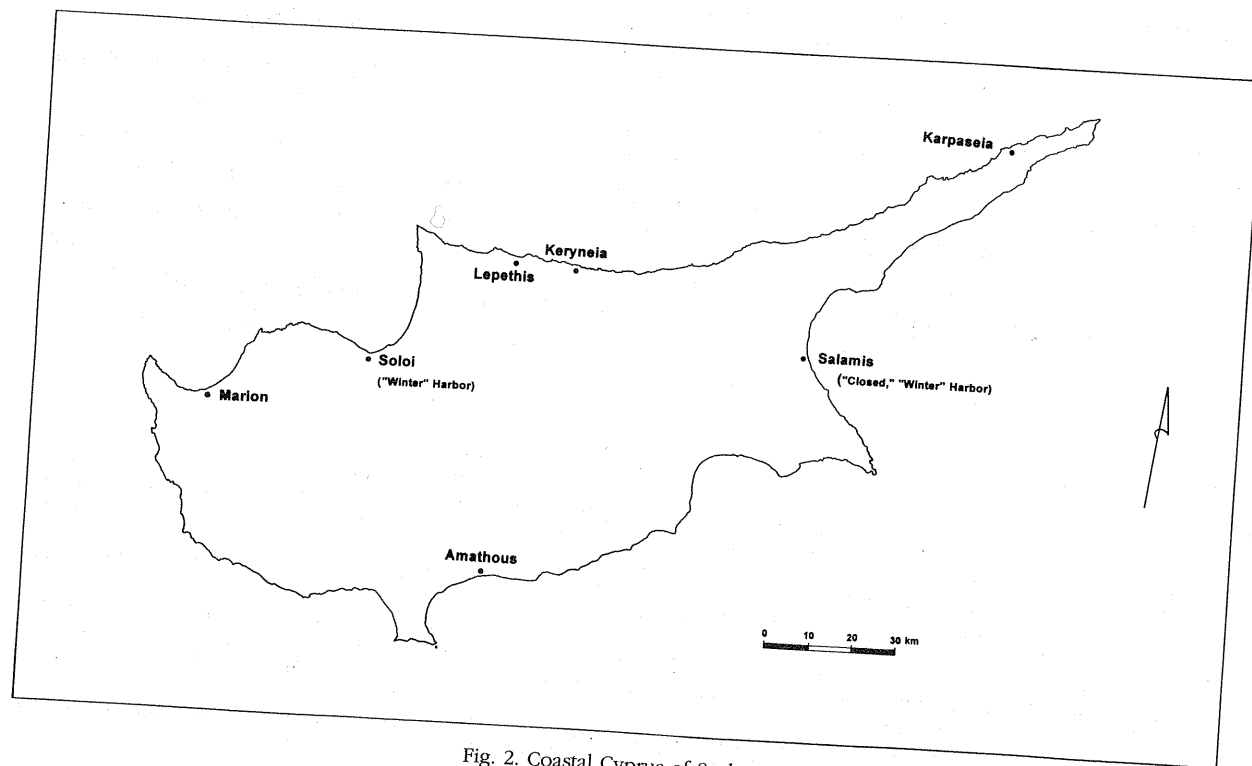


Fig. 2. Coastal Cyprus of Scylax.

Dhrousha-Kioni on southwestern Akamas (Figs 7, 8), contain discarded amphoras of Roman date from as far away as Southern Gaul and Mauretania Caesariensis (Leonard 1995).⁵ Most importantly perhaps from the local perspective, the architectural and ceramic evidence from diverse sites such as Nea Paphos, Kourion, Latchi, and Dhrousha-Kioni, in combination with accounts of Roman authors such as Strabo and that of the anonymous *Stadiasmos*, indicate that Roman Cypriot shores were punctuated by a graduated network of large ports, medium-sized harbours, and small anchorages.⁶ Such a complex series of maritime facilities suggests a dynamic, highly developed mode of life along the shores of provincial Roman Cyprus.

PREVIOUS SCHOLARSHIP

The study of ancient Cypriot harbours is predominantly a concern of the past half-century, though D.G. Hogarth, K. Lehmann-Hartleben, and J. du Plat Taylor made earlier fundamental contributions to the subject. Hogarth, upon visiting the island in 1888, described harbour remains at the ancient sites of Nea Paphos, Ourania (at the locality of *Aphentrika*), and Karpasia (near Rizokarpaso) (Fig. 1) (Hogarth 1889, 7, 88, 90). Hogarth also identified coastal ruins near Akanthou as belonging to the harbour of ancient Aphrodision (Hogarth 1889, 99). Lehmann-Hartleben's (1923) monograph on Mediterranean ancient harbours, including Cypriot sites such as Salamis, Kition, and Nea Paphos, was, in Blackman's words, "largely a compilation based on literary evidence rather than personal observation" (Blackman 1982, 86).⁷ Du Plat Taylor's study of Ayios Philon (Karpasia) in the 1930s included mapping and close examination of the ancient harbour, founded perhaps as early as the Classical period (du Plat Taylor 1980; du plat Taylor, Megaw 1981). Roman coastal cities and harbours have been addressed by Hill, T.B. Mitford, H. Hauben, and D. Potter (Hill 1940, 231-2; Mitford 1980, *passim*; Hauben 1987, 213ff.; Potter, forthcoming).

Field research began extensively in the 1960s and 1970s, when K. Nicolaou recorded the topography of Nea Paphos and of Kition (Nicolaou 1966a, 1976a). Nicolaou also produced a brief overview of ancient Cypriot harbours (1966b). His fundamental survey presents nineteen harbours or anchorages indicated by literary sources and/or observable architectural remains, including: Salamis, Arsinoe-Ammochostos (Famagusta), Leukolla,⁸ Kition, Amathous, Kourion, Palaepaphos, Cape Zephyrion, Arsinoe (somewhere between Zephyrion and Nea Paphos), Nea Paphos, Marion, Limenia (modern Limniti), Soloi, Melabron (near Ayia Erini), Lapethos, Kyrenia, Makaria (east of Kyrenia near Kalogrea, at the locality of *Moulos*), Karpasia, and Ourania (Figs 1, 12).⁹

5. For other imports during the Roman period see D.F. Williams 1987; Hayes 1991.

6. Quinn (1961, 71ff.) (cited by Rickman 1988, 105) provides an instructive overview of the topographical and functional differences recognized between modern ports and harbours. In general discussion of maritime facilities, I follow Henry Cleere's usage of the general term "harbour", which he defines as "any installation from which goods and passengers could be transferred from ship to shore, and vice versa" (Cleere 1978, 36).

7. Cypriot harbours discussed by Lehmann-Hartleben include: Kition (259-260, no. 132), Lapethos (262, no. 145), (Nea) Paphos (273-4, no. 201), Salamis (280, no. 248), Soloi (282, no. 265).

8. Nicolaou places Leukolla in the *Protaras* locality (1966b: 96). S. Hadjisavvas, however, to whom I am indebted for the following information, suggests that Leukolla may have been located at *Armiropigano*, app. 2.5 miles SE of Paralimni, where a substantial Hellenistic-Roman settlement has been recorded. An apparently smaller Hellenistic-Roman settlement, in the nearby locality of *Hellenes*, may also be worthy of consideration.

9. Place-names are standardized in the text and notes to avoid confusion. Figures accompanying the discussion of ancient sources, however, reflect the original spellings and variant forms. See also Fig. 12.

The 1960s also witnessed the first underwater archaeological survey in Cyprus, conducted by W. Daszewski in the harbour at Nea Paphos, and H. Frost's study of stone anchors from the Bronze Age harbours of Hala Sultan Tekke and Kition (Daszewski 1981; Frost 1971). A second underwater harbour survey was undertaken by N. Flemming in the early 1970s at Salamis (Flemming 1974).

With the 1980s and 1990s, the study of ancient Cypriot harbours has accelerated. A team sponsored by the French School in Athens, led by J.Y. Empereur, has investigated submerged remains at Amathous (Empereur 1985; Empereur, Verlinden 1987); C. Giangrande's team, sponsored by the Institute of Archaeology in London, conducted an underwater survey along the west coast, providing information on anchorages such as Keratidhi Bay and Maniki (Giangrande *et al.* 1987); and M. Yon, of the Maison de l'Orient in Lyon, has revealed at Kition the only shipsheds yet recorded on the island (Yon 1990) (Fig. 1). Two other significant studies were carried out in this period of activity: A. M. Collombier has written on Cyprus's changing coastlines, including one of the few discussions of Akrotiri peninsula (Collombier 1987);¹⁰ and J. Mlynarczyk has examined the history of the Hellenistic port at Nea Paphos (Mlynarczyk 1990).¹¹

Most recently since 1989 the writer has conducted preliminary coastal surveys of various harbour sites along the south coast,¹² and in 1991 R. Hohlfelder and Leonard began the mapping and study of submerged harbour remains at Nea Paphos (Hohlfelder, Leonard 1993; Leonard, Hohlfelder 1993). The results of these two efforts are discussed below.

LITERARY EVIDENCE

Literary evidence for ancient Cypriot harbours may be found primarily in texts of the Roman period. Only the Classical accounts of Isocrates and Scylax, with a brief reference by Diodorus Siculus in the 1st cent. B.C., directly indicate the existence of earlier harbour facilities.¹³ Isocrates (*Evag.* 47) reports that Evagoras was responsible for building the harbour at Salamis. Scylax (103), enumerating the Cypriot cities of Salamis, Karpasia, Kyrenia, Lapethos, Soloi, Marion, and Amathous, credits Salamis and Soloi with having "winter" (χειμερινός) harbours, which apparently could provide shelter for ships during the harsh winter sailing season (Fig. 2). Scylax also reports that Salamis had a closed harbour (λιμὴν κλειστός), then concludes enigmatically that all the Cypriot cities named in his text have deserted harbours (λιμένας ἐρήμους). Diodorus Siculus seems to allude to the same closed plan at Salamis when he notes (20.50.1) that the harbour had a narrow exit—at the time of the battle between Demetrius and Ptolemy in the late 4th cent. B.C.

Pliny (*NH* 5.129-131) and Ptolemy (*Geog.* 5.14.1-7), in the first and second centuries A.D., respectively, also enumerate coastal towns in Roman Cyprus, including—for Pliny—

10. For more on the gradual transformation of the Akrotiri island into a peninsula, see also: Morel 1960; Toumazis *et al.*, forthcoming. Gratitude to A. Toumazis for this bibliography.

11. Additional evidence of ancient maritime activity around Cypriot coasts also may be found in Envig, Åström 1975; Envig, Beichmann 1984; Green 1969, 1973.

12. See above, no. 2, and Leonard 1995.

13. The date of Scylax remains questionable.

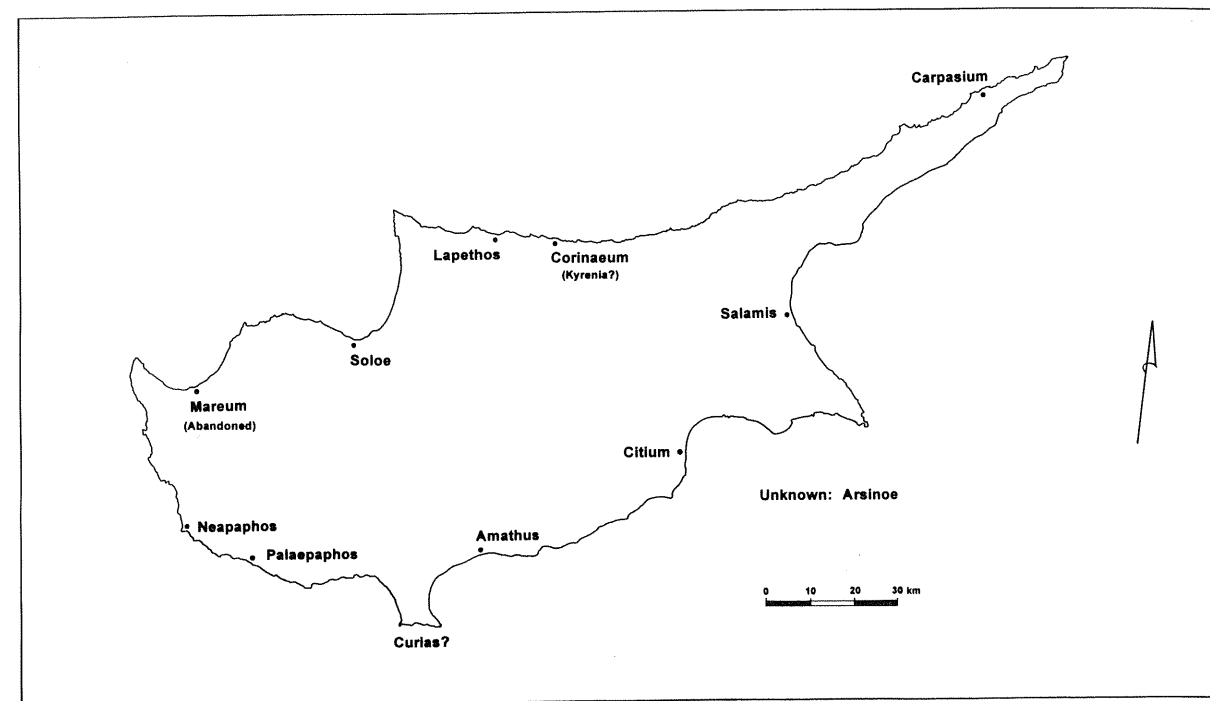


Fig. 3. Coastal Cyprus of Pliny.

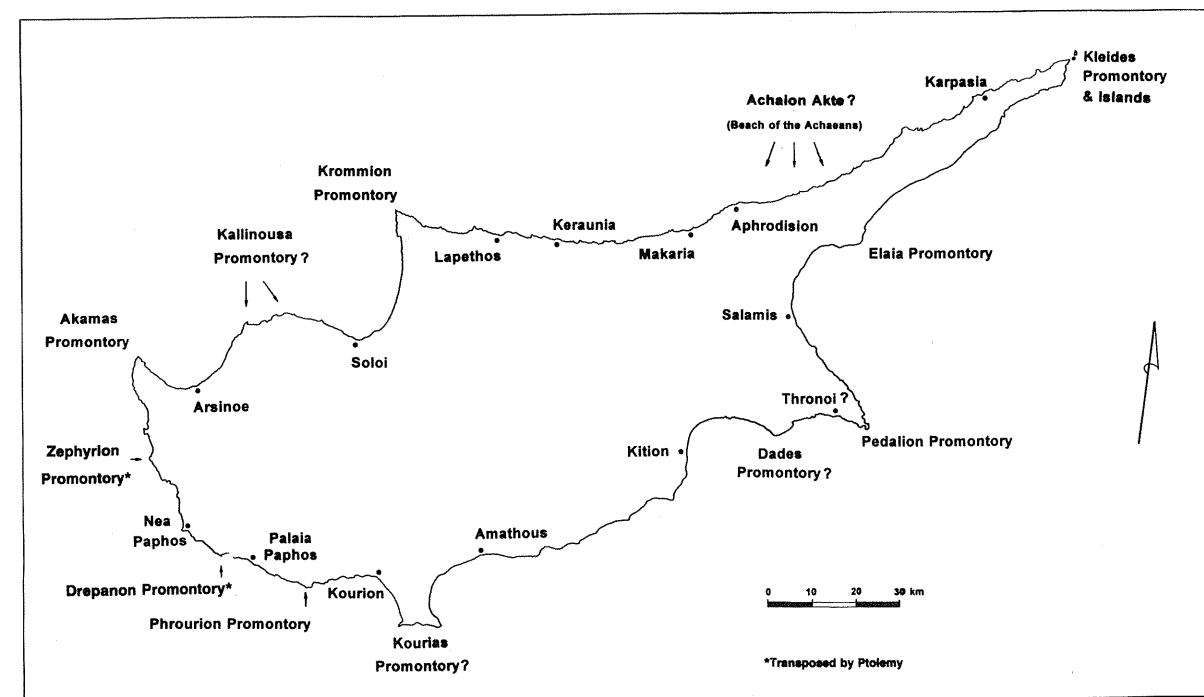


Fig. 4. Coastal Cyprus of Ptolemy.

Nea Paphos, Palaepaphos, Kourias,¹⁴ Kition, Corinaeum,¹⁵ Salamis, Amathous, Lapethos, Soloi, Arsinoe,¹⁶ Karpasia, and the abandoned city of Marion (Fig. 3). Ptolemy lists Nea Paphos, Palaepaphos, Kourion, Amathous, Kition, Thronoi,¹⁷ Salamis, Karpasia, Aphrodision, Makaria, Keraunia (probably Kyrenia), Lapethos, Soloi, and Arsinoe (probably Marion) (Fig. 4). All of these coastal towns may have also had harbours, but neither Pliny nor Ptolemy directly mention harbour facilities. Only the Augustan geographer Strabo and the possibly contemporary *Stadiasmos* explicitly attest to the existence of Roman Cypriot harbours.¹⁸

Strabo (14.6.3) lists the coastal towns of Lapethos, Aphrodision, Karpasia, Salamis, Arsinoe (Famagusta), Leukolla, Kition, Palaia (unknown), Amathous, Kourion, Palaepaphos, Arsinoe (unknown), (Nea) Paphos, Arsinoe (Marion), and Soloi (Fig. 5). In addition, he reports that Karpasia, Arsinoe (Famagusta), Leukolla, Nea Paphos, and Soloi each have a *λιμὴν* or harbour. Kition has a *λιμὴν κλειστός*, a closed harbour. Lapethos and Palaepaphos each have a *ὑφορμος* (anchorage?), Kourion has a *ῥομος* (harbour? —in the intermediate sense), and Cape Zephyrion and the unknown Arsinoe each have a *πρόσορμος* (anchorage?). Strabo also states that Lapethos, besides its *ὑφορμος*, has dockyards (*νεώρια*), and that between Amathous and Kourion lies Kourias, which he describes as “peninsula-like” (*χερρονησώδης*). For the remaining towns of Aphrodision, Salamis, Amathous, and Arsinoe-Marion, Strabo mentions no maritime facilities at all, perhaps revealing indirectly that these places were no longer used as harbours.

The *Stadiasmos* (297-317) enumerates the coastal towns of (Nea) Paphos, Palaepaphos, Kouriakon (possibly Kourion), Amathous, Ammochostos (Famagusta), Salamis, Palaia,¹⁹ Arsinoe (Marion), Melabron, Soloi, Kyrenia, Lapethos, Karpasia, and Kition (Fig. 6). The *Stadiasmos* account —much like the modern *Mediterranean Pilots* of the British Admiralty— not only relates which towns have harbour facilities, but provides sailors with additional useful information: Nea Paphos has a triple harbour for all winds (*λιμένα τριπλὸν παντί ἀνέμῳ*), Ammochostos, Salamis, Palaia, Arsinoe-Marion, and Karpasia each have a *λιμὴν*, but the *λιμὴν* at Ammochostos, while also suitable for all winds, has reefs at its entrance —beware! The *λιμὴν* at Arsinoe-Marion is deserted (*ἔρημος*), and the north wind disturbs it. That at Karpasia, according to the *Stadiasmos*, is only suitable for small ships (*μικροὶς πλοίοις*), and is also disturbed by northern winds. Lapethos and Melabron each have a *ῥομος*, but that at Melabron (*θερινός*) should only be used in the summer. Kyrenia has a *ὑφορμος*, while Amathous and Soloi are described as harbourless (*ἀλίμενοι*).

14. Kourias may be identified with Kourion, which Pliny does not otherwise include, but this seems unlikely given Strabo's testimony discussed below. Instead, Kourias was probably a neighboring territory or settlement within Kourion's domain, such as the Akrotiri Peninsula or the apparent harbour (town?) located thereon at Dreamer's Bay; see below, no. 20. Note that Ptolemy also includes “Kourias” as a promontory.

15. Perhaps Kyrenia: see Hill 1940, 231-2, n. 3, 270, n. 6; Mitford 1980, 1324, n. 162.

16. The disorder of Pliny's list prevents the identification of this particular Arsinoe.

17. Ancient Thronoi may have been situated at *Tornos*, a locality four miles west of Ayia Napa, where there are the remains of a Roman and Early Christian town; see Hadjisavvas 1983, 316, pls 50: 3, 50: 4. Gratitude to S. Hadjisavvas for this reference.

18. The date of the *Stadiasmos* remains uncertain, and may be as late as 4th century: see Müller 1855, CXXVIII, 503-4, paragraphs 310-1; Pirazzoli *et al.* 1992, 375.

19. Perhaps the same Palaia that Strabo lists between Kition and Amathous; several cities in the *Stadiasmos* account are enumerated out of sequence.

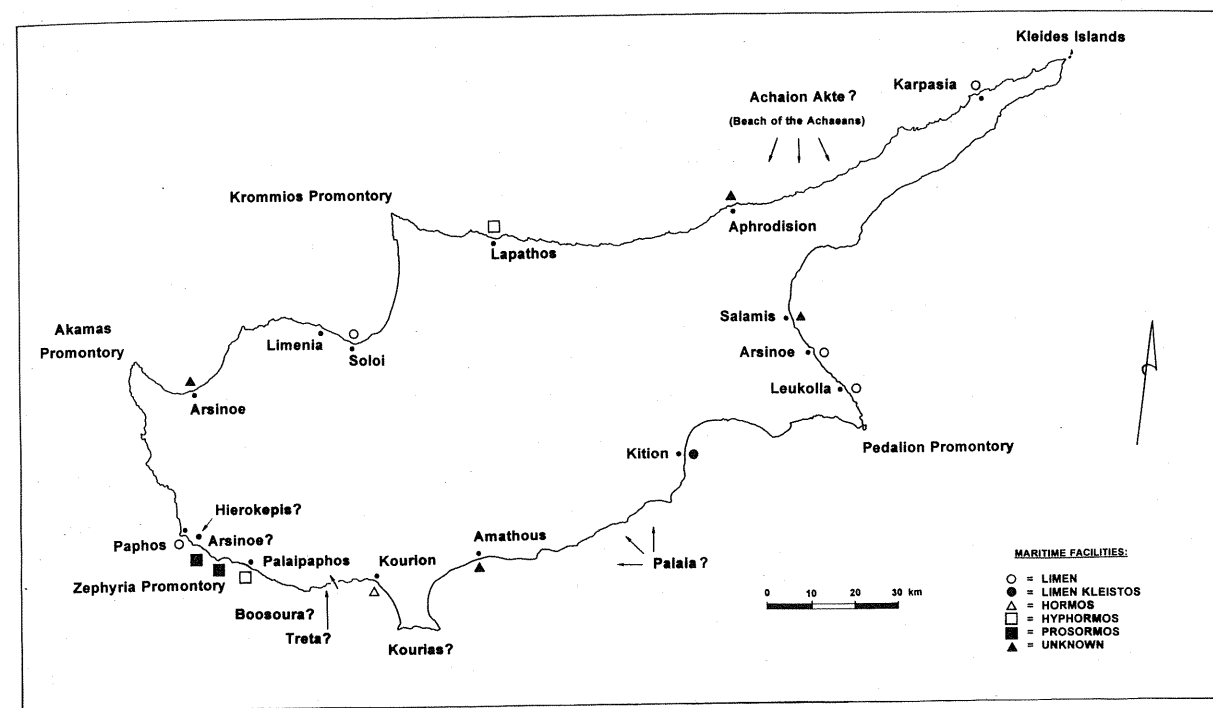


Fig. 5. Coastal Cyprus of Strabo.

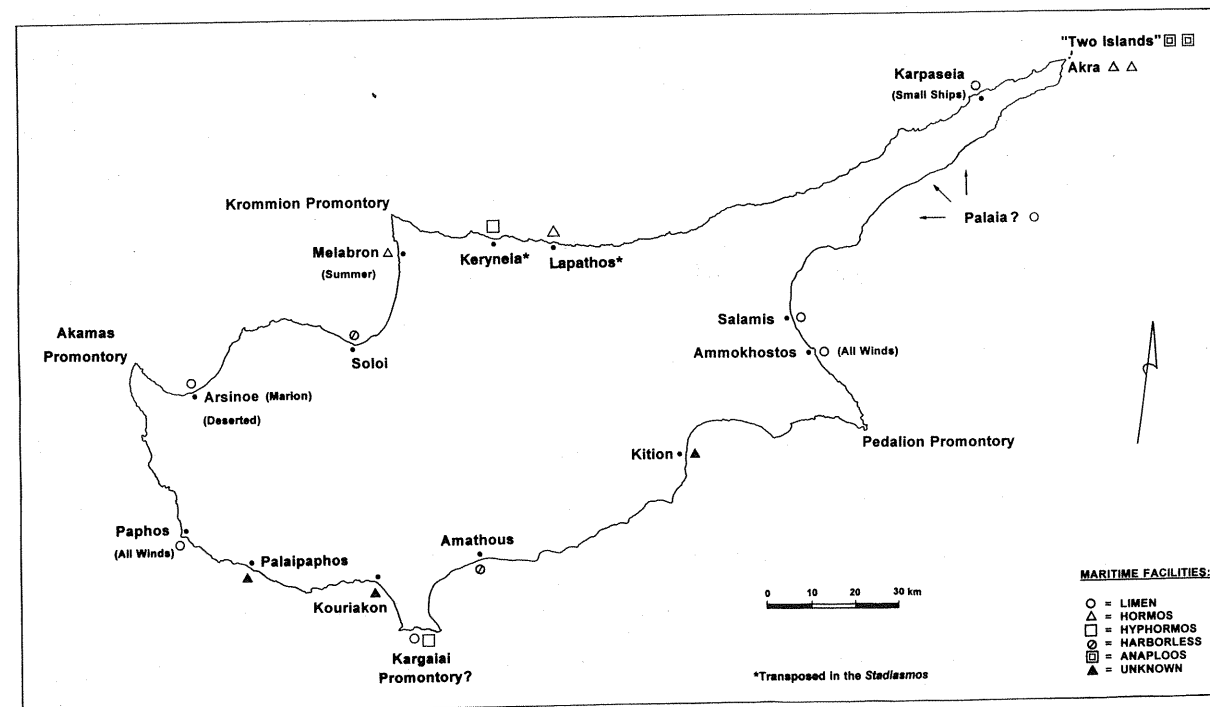


Fig. 6. Coastal Cyprus of the *Stadiasmos*.

There are no references at all to maritime facilities at Palaepaphos, Kouriakon, and Kition. Here again their omission from the text is suggestive of abandonment or lack of facilities, but must be regarded as inconclusive evidence.

Three other places described by the *Stadiasmos* are noteworthy: Kargaiai;²⁰ Akra (Cape Andreas); and two islands near Akra, apparently the Kleides Islands. Kargaiai, which the *Stadiasmos* reports is peninsular (*ἀκρωτήριον*), has both a *λιμὴν* and a *ὑφορμος*, and a supply of water. Akra has two *ὄρμοι*, both with fresh water supplies. The two islands near Akra each have an *ἀνάπλοος*, some sort of inlet or canal leading away from the sea.²¹

The accounts of Strabo and the *Stadiasmos* reveal an intriguing network of Roman maritime facilities, but their obscure Greek terminology leaves doubt about the topography and function of these various coastal sites. What constituted a *λιμὴν*? What were the topographical and/or functional differences between a *λιμὴν*, *ὄρμος*, *ὑφορμος*, and *πρόσορμος*? To begin to address these questions, the remains of actual maritime facilities described by Strabo and the *Stadiasmos* must be located *in situ*, either on land or in the sea. Recent coastal survey in Cyprus, combined with results of previous archaeological studies, makes possible a preliminary differentiation among types of Roman maritime facilities, although the exact nature and application of ancient Greek terminology remains for the moment elusive (see below, note 30).

CYPRUS COASTAL SURVEY

An extensive preliminary survey of the southern Cypriot coastline was initiated by the author in 1989. The objectives of this ongoing harbour study include:

- 1) identification of maritime facilities reported by ancient authors,
- 2) location of harbour sites *not* mentioned in the texts,
- 3) recording of architectural and ceramic evidence at selected sites, and
- 4) collection and analysis of ceramic samples, for the purpose of establishing trade connections. While the primary focus of this coastal survey is evidence for Roman harbours and trade, indications of earlier and later maritime activity are also being recorded.

The geographical parameters of the survey are the island's southern coasts under the control of the Republic of Cyprus. For the island's northern shores, only those harbour sites which appear in ancient texts or in pre-1974 archaeological reports are included in the present study. The obvious magnitude of such a study has required that possible Roman harbour sites and potential search areas first be identified through the literary evidence or

20. Kargaiai (like Kourias; see above n. 14) may be identified by its position and description in the *periplus* with the Akrotiri Peninsula, perhaps even the harbour at Dreamer's Bay. In the 1980s F.M. Haggerty completed a preliminary plan of the mole at Dreamer's Bay, which has a preserved length of approximately 165m. The submerged structure, built of large squared blocks, increases in width from about 5m. near shore to about 10m. at its seaward end. The author extends his gratitude to F.M. Haggerty for generously providing access to his drawing and notes, and for his continued assistance in the study and recording of ancient harbours in the Episkopi area.

21. Hogarth, in 1888, despite some initial difficulties with a "perfidious" Arab boatman, was able to examine the Kleides Islands. Three of them he dismisses as flooded reefs and two others are too small to be of significance. For the sixth, nearly a mile from shore, he reports: "On its northern side reeds and rank grass indicate a dried spring, but I searched every inch of the ground without finding a tomb, a hewn stone, a cut rock, or any trace of ancient inhabitation whatsoever" (1889, 82).

through evaluation of coastal topography using maps, aerial photographs, comparative evidence for pre-modern and modern harbours, and preliminary survey in vehicles.

Comparative evidence includes 19th and 20th century harbour sites, as indicated by coastal carob storehouses, and currently-used anchorages described in the *Mediterranean Pilot* for Cyprus (Mahoney 1988). Carobs are the fruit of the carob tree (*Ceratonia siliqua* L.), and have long constituted a major export crop in Cyprus (Orphanos, Papaconstantinou 1969, 3; Orphanos 1980, 221). Carobs are harvested annually beginning in mid-August, and until the 1950s or 1960s were transported to numerous local exportation points all around the Cypriot coasts (Christodoulou 1959, fig. 58) (Fig. 7). Carobs collected from the surrounding countryside were stored at these coastal stations, before being loaded onto lighters and sent out to larger ships moored off shore. A general correlation between the positions of coastal carob storehouses and the locations of ancient anchorages was confirmed through snorkel surveys early in the study.²² The *Mediterranean Pilot* includes, in addition to larger harbour facilities, entries on minor coastal areas, such as Lara in the southwest, where modern ships can be anchored.

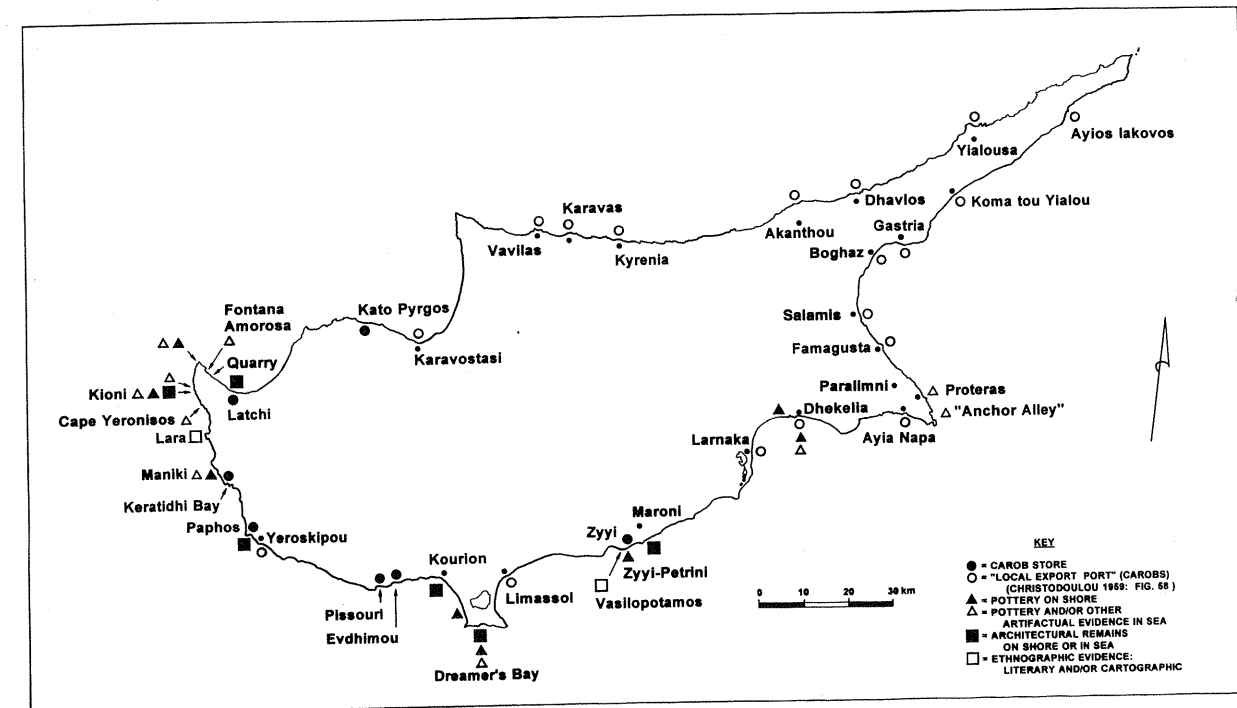


Fig. 7. Cyprus Coastal Survey.

Possible ancient harbour sites, once identified, are investigated by snorkel survey following a general grid pattern. The underwater topography of sites such as Drousha-Kioni has occasionally required use of scuba equipment and adjustment of search patterns (Leonard 1995). The adjacent shoreline and surrounding areas are also examined, particularly for post-Roman geomorphological changes such as silting or uplift. Architectural remains and significant ceramic scatters have been recorded by triangulation with a theodolite and by localized mapping with meter tapes. Buoys are used in the sea for marking sub-

22. Gratitude to H.W. Swiny, who originally suggested to me the possibility of such a correlation.

merged features to be recorded, and subsequent site plans are tied into Department of Lands and Surveys' triangulation data points.²³

Since the inception of the Cyprus Coastal Survey, possible ancient harbour sites between the areas of modern Paralimni and Kato Pyrgos have been recorded (Fig. 7). The sites of Dhrousha-Kioni, Kourion, and Nea Paphos, where efforts have been concentrated, will be discussed here to illustrate the range of Cypriot maritime facilities in use during Roman times.

Dhrousha-Kioni

Kioni is a small natural anchorage not mentioned in ancient texts. Two columns, which once stood on each side of a deep central channel, were probably used by ancient sailors as navigational aids when entering the anchorage (Fig. 8). One of these now lies submerged, fallen from its original position, while the other, of imported white marble and almost certainly in secondary context, remains standing *in situ*. The poorly preserved foundations of an ancient seaside structure, perhaps a storehouse, may be observed close upon the shore. A small stone anchor, probably modern, lies near shore in shallow water. A small stone anchor, probably modern, lies near shore in shallow water.

The site's most important feature is the extensive collection of broken pottery on the seabed, ranging in date from the Cypro-Archaic through the Medieval periods. Nearly fifty ceramic samples, representing more than fifteen different shapes, have been collected (Leonard 1995). Dense concentrations of Hellenistic Rhodian and mid-Roman pinched-handle amphoras may represent the cargoes of two unfortunate ships wrecked while entering or exiting the anchorage.²⁴ The majority of pottery preserved on the seabed appears to be the typical jettisoned material characteristic of ancient anchorages.

Mauretanian and Gallic amphoras (3rd-4th c.) indicate long-distance trade connections.²⁵ Pinched-handle amphoras (1st-4th c.), which are thought to have been produced at several sites around the Eastern Mediterranean, may represent regional trade activity.²⁶ The anchorage of Dhrousha-Kioni probably served the neighboring settlement of Ayios Kononas (Fejfer *et al.* 1995), while also providing passing ships with safer refuge from inclement weather than other more exposed anchorages on the western coast of Akamas. The nearby spring at Ayios Kononas may have been another attractive feature in this otherwise inhospitable terrain. Sgraffito and related wares recovered from the central channel indicate continued usage of the anchorage in Medieval times. Today, local fishermen seeking quieter, less-fished waters still shelter their boats at Dhrousha-Kioni.

Kourion

Kourion, where the remains of a single breakwater are preserved extending from beneath the sandy beach, was apparently a harbour of some importance during Roman

23. Buoys used in survey and mapping at Dhrousha-Kioni and Nea Paphos were provided through the generous auspices of the Ambrosia Olive Oil Co., Ltd., of Larnaca, to whom the author extends his gratitude.
 24. See Grace 1979, figs 22, 62 (left), and Robinson 1959, Group G, no. 199, for exs. of the Rhodian and pinched-handle forms.
 25. See Riley 1982, fig. 85, no. 251 for ex. of this form, produced both in N. Africa and Gaul; see also Will 1987, 209-10 for recent discussion of the dual origins and similarity between the two variants.
 26. For date, sources, see: C. Williams 1989, 92-3 (Cilicia); Hayes 1991: 91 (Cyprus); Zemer 1977, 52 (N. Africa).

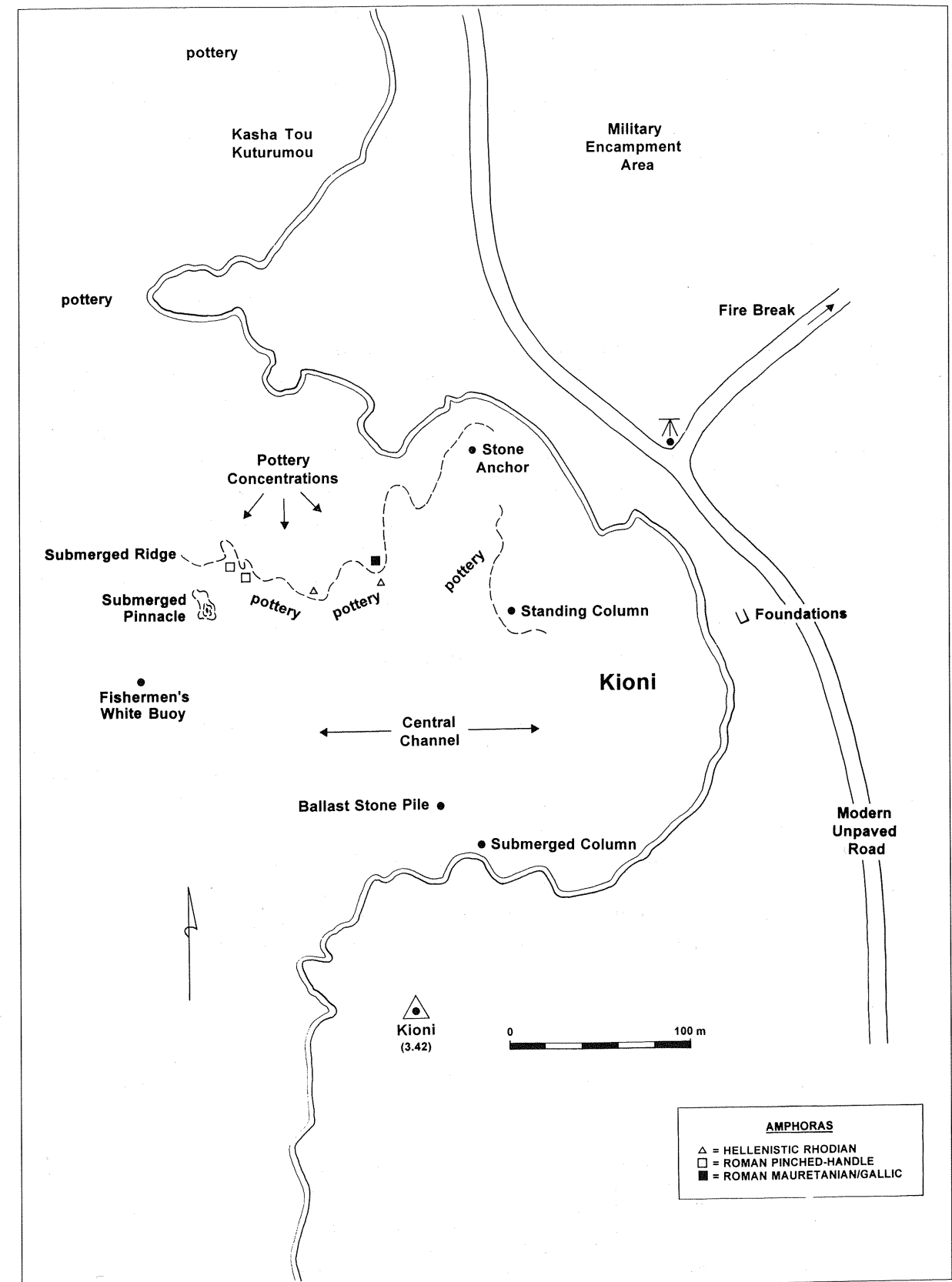


Fig. 8. Dhrousha-Kioni: site plan.

times (Figs 9, 10). Recognized by Roman authors and serving a substantial city on the bluff above, Kourion harbour was probably a regular stop for ancient ships traversing the south coast.

Squared blocks fallen from the silted, crumbling breakwater have been recorded and located from data points on shore. Mapping of the breakwater's full preserved extent has been initiated using triangulation and aerial photographs. The breakwater now consists of two parts: a main section about 68m. long, narrowing toward its seaward end, with a maximum width of about 12m.; and a smaller scatter of squared stones and amorphous boulders extending about 30m. further. The sandy seabed around the breakwater often shifts substantially in rough seas, thereby revealing or obscuring various portions of the remains. Little pottery is visible around the exposed mole.

In antiquity the harbour's inner perimeter probably extended further inland toward the southern face of the overlooking bluff. Much of the terrain between the base of the cliffs and the present waterline is low and sandy, and portions in the center are permeated with brackish water. A poorly preserved flight of at least three rock-cut steps, each about 1m. wide by 0.50m. deep, once provided a passage between the harbour and the upper city near the southeast corner of the bluff.²⁷ The only land-based structure discovered to date in association with Kourion harbour is a possible basilica, marble columns of which may be seen atop a low mound at the base of the cliffs.²⁸

Nea Paphos

The study of Nea Paphos harbour, led by R. L. Hohlfelder and independent from the Cyprus Coastal Survey, has revealed architectural evidence for the most developed type of maritime facility used in Roman Cyprus (See Hohlfelder, elsewhere in these proceedings; Hohlfelder, Leonard 1993; Leonard, Hohlfelder 1993). Nea Paphos was one of the island's most important cities, mentioned prominently by Roman writers, and serving until the 4th century as the capital of Roman Cyprus. Topographical features that differentiate the harbour of Nea Paphos from other smaller Roman Cypriot harbours include her massive twin breakwaters, supplemented perhaps by internal quays and three inner basins. Towers may have stood not only upon the outer breakwaters, but also along the inner sea wall. Built originally in the Hellenistic period, the harbour of Nea Paphos flourished during Roman times, probably serving as a major port of entry and exit, and a centre for local and regional commercial activity.

CONCLUSIONS

Literary, archaeological, and comparative ethnographic evidence suggests that Roman Cyprus was equipped with a diverse, graduated series of maritime facilities. This coastal network consisted of ports, harbours, and anchorages topographically and to some degree

27. Gratitude to F.M. Haggerty.

28. This structure was recently investigated by the Cypriot Department of Antiquities.



Fig. 9. Kourion: aerial photo (F. M. Haggerty).

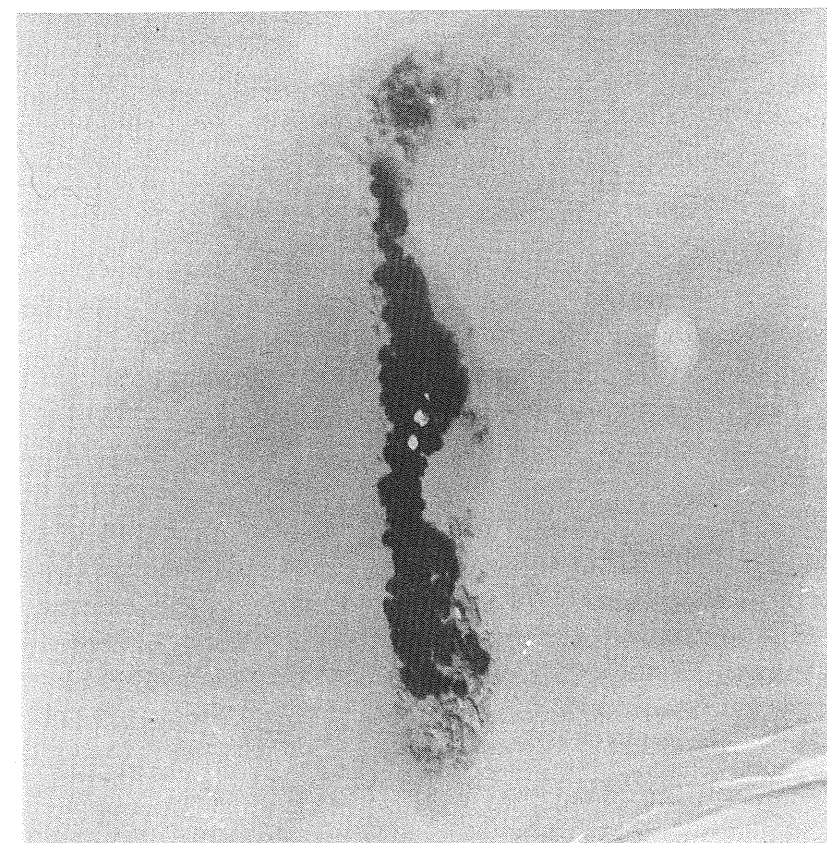


Fig. 10. Kourion: aerial photo (F. M. Haggerty).

functionally distinct from one another (Fig. 11). Cities such as Nea Paphos and Salamis had substantial maritime facilities and constituted major Roman ports. Smaller harbours such as Kourion, Karpasia, Lapethos, and Kyrenia, and tiny anchorages such as *Kioni* and Keratidhi Bay, often located only a few kilometres apart, operated as refuges during stormy weather, fresh water and passenger stops, and probably transshipment points for local markets. Roman Cyprus, with its complex network of maritime facilities, was indeed, in the words of the 4th century writer Ammianus Marcellinus (14.8.14), an *insula portuosa*.

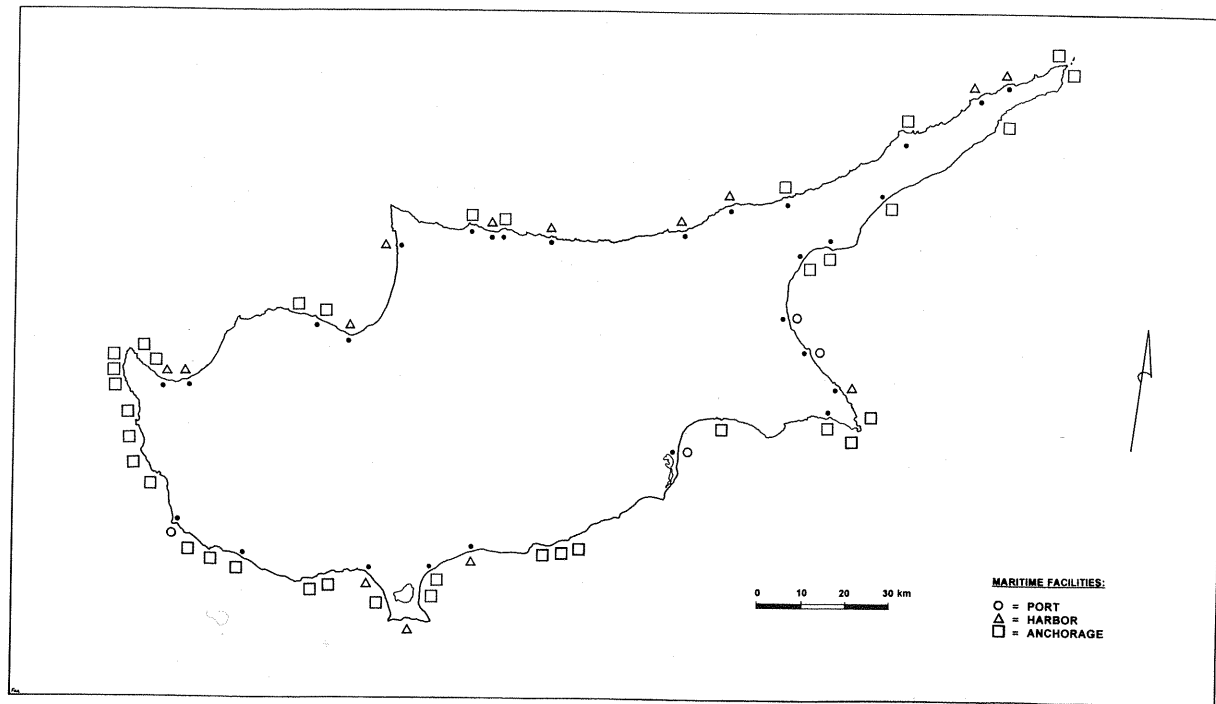


Fig. 11. Possible Roman ports, harbours, and anchorages.

The harbour terminology of Strabo and the *Stadiasmos* may reflect such a graduated system of coastal sites. Perhaps *λιμὴν* can be interpreted both in the general sense of a “harbour”, and specifically to mean a “port”. *ὄρμος* might then signify “harbour” in its intermediate sense, with limited facilities and constructional development, and *ὑφορμος* and *πρόσορμος* may have been terms for anchorages, perhaps sheltered from or exposed to particular winds.²⁹ Archaeological evidence, however, when compared with textual references, only increases our confusion.

Strabo lists (Nea) Paphos and Kition as *λιμένες*, but also apparently less significant sites such as Karpasia and Leukolla. Strabo credits Lapethos and Palaepaphos with *ὑφορμοι*, which seems appropriate to Palaepaphos, where no harbour facilities have been found — but ill-suited to Lapethos, where architectural harbour remains do exist (Nicolaou 1976b, 135). Was the breakwater at Lapethos perhaps constructed after Strabo wrote his description? The *Stadiasmos* attributes a *ὄρμος* to Lapethos, which seems to agree with archaeological evidence and textual interpretation for other “intermediate” harbours such as Kou-

29. Casson treats *ὄρμος* as an anchorage within a *λιμὴν* (1971, 362).

MODERN*	SCYLAX	PLINY	PTOLEMY	STRABO	STADIASMOS
Akamas Peninsula			Akamas Promontory Ἀκάμας ἄκρα	Akamas (Promontory) Ἀκάμας	Akamas (Promontory) Ἀκάμας
Akrotiri Peninsula		Curias	Kourias Promontory Κουριάς ἄκρα	Kourias Κουριάς	Kargaiiai (Promontory) Καργαίαι
Amathous, Amathus	Amathous Ἀμαθοῦς	Amathus	Amathous Ἀμαθοῦς	Amathous Ἀμαθοῦς	Amathous Ἀμαθοῦς
Aphrodision			Aphrodision Ἀφροδίσιον	Aphrodision Ἀφροδίσιον	
Cape (Apostolos) Andreas			Kleides Promontory Κλειδῆς ἄκρα		Akra Ἄκρα
Cape Aspro(n)			Phourion Promontory? Φρούριον ἄκρον		
Cape Drepanon			Drepanon Promontory Δρέπανον ἄκρον		
Cape Elaia			Elaia Promontory Ελαία ἄκρα		
Cape Greco, Cape Gkreko			Pedalion Promontory Πηδάλιον ἄκρον	Pedalion Promontory ἄκρα Πηδάλιον	Pedalion Πηδάλιον
Cape Kormakiti(s)			Krommion Promontory Κρομμίων ἄκρα	Krommion Promontory ἄκρα Κρομμίου	Krommion Promontory ἄκρα Κρομμίου
Cape Pyla			Dades Promontory? Δάδες ἄκρα		
Cape Zephyrion			Zephyrion Promontory Ζεφύριον ἄκρον	Zephyria Promontory ἄκρα Ζεφυρία	
Evdhimou, Avdimou				Treta? Τρήτα	
Famagusta				Arsinoe Ἀρσινόη	Ammokhostos Ἀμμόχωστος
Karpasia, Carpasia	Karpaseia Καρπασεία	Carpasium	Karpasia Καρπασία	Karpasia Καρπασία	Karpaseia Καρπασεία
Karpas Peninsula (area of northern shore)			Achaion Akte Ἀχαιῶν ἀκτὴ	Achaion Akte Ἀχαιῶν ἀκτὴ	
Kition, Citium		Citium	Kition Κίτιον	Kition Κίτιον	Kition Κίτιον
Kleides Islands				Kleides Islands Κλειδῆς νῆσοι	two islands νῆσοι δύο
Kokkina Point-Pomos Point (area of)			Kallinoussa Promontory? Καλλίνουσα ἄκρα		
Kourion, Curium			Kourion Κούριον	Kourion Κούριον	Kouriakon Κουριακόν
Kyrenia	Keryneia Κερύνεια	Corinaeum?	Keraunia Κεραυνία		Keryneia Κερύνεια
Lapethos, Lapithos	Lepethis Λήπηθις	Lapethos	Lapethos Λάπηθος	Lapathos Λάπαθος	Lapathos Λάπαθος
Leukolla, Leucolla				Leukolla Λεύκολλα	
Limenia				Limenia Λιμενία	
Makaria			Makaria Μακαρία		
Marion	Marion Μάριον	Mareum		Arsinoe Ἀρσινόη	Arsinoe Ἀρσινόη
Melabron					Melabron Μελαβρόν
Nea Paphos, Kato Paphos, K. Pafos		Neapaphos	Nea Paphos Πάφος Νέα	Paphos Πάφος	Paphos Πάφος
Palaepaphos, Palaia Pafos		Palaepaphos	Palaia Paphos Πάφος Παλαιά	Palaipaphos Παλαίπαφος	Palaipaphos Παλαίπαφος
Pissouri				Boosoura? Βόσουρα	
Salamis	Salamis Σαλαμίς	Salamis	Salamis Σαλαμίς	Salamis Σαλαμίς	Salamis Σαλαμίς
Soloi, Soli	Soloi Σόλοι	Soloe	Soloi Σόλοι	Soloi Σόλοι	Soloi Σόλοι
Thronoi, Throni			Thronoi Θρόνοι		
(Unknown)				Arsinoe (between Palaepaphos & Nea Paphos) Ἀρσινόη	
(Unknown)				Palaia Παλαιά	Palaia Παλαιά
Yeroskipou, Geroskipou				Hierokerpis? Ἱεροκρηπίς	

* Modern place-names appear in English on maps issued by the Department of Lands and Surveys of Cyprus. The modern forms included herein are not intended as a complete list of all possible modern variants.

Fig. 16. Place-names and transliterations.

tion, but he lists Kyrenia, where ancient harbour remains are also known, as a ὑφορμος. Perhaps as harbour studies in Cyprus and around the Mediterranean continue, ancient terminology will prove less ambiguous than it now seems.³⁰ Already harbour studies illuminate the vigorous maritime economy characteristic of both ancient and modern Cyprus. Ammianus Marcellinus writes on Late Roman economic conditions:

This Cyprus is so fertile and so abounds in products of every kind, that without the need of any help from without, by its native resources alone it builds cargo ships from the very keel to the topmast sails, and equipping them completely entrusts them to the deep. (14.8.14) (J.C. Rolfe, transl., Loeb ed.)

Although Roman Cyprus may have been quiet from an imperial, political, military standpoint, the inhabitants of the island seem to have enjoyed, based upon textual and archaeological evidence, a dynamic and prosperous maritime culture.

30. The question of ancient harbor terms and their possible meanings is further examined in J.R. Leonard, "Harbor Terminology in Roman Periplus", in the proceedings of the symposium *Res Maritimae 1994: Cyprus and the Eastern Mediterranean, Pre-history through the Roman Period; the Second in the Series, "Cities on the Sea," Nicosia, 18-22 October, 1994.* (Forthcoming: American Schools of Oriental Research, Cyprus American Archaeological Research Institute).

REFERENCES

- BLACKMAN, D.J. 1982: "Ancient harbours in the Mediterranean, Part I," *IJNA*, 11.2, 79-102.
- CASSON, L. 1971: *Ships and Seamanship in the Ancient World* (Princeton).
- CHRISTODOULOU, D. 1959: *The Evolution of World Land Use Pattern in Cyprus* (Bude, Cornwall, England).
- CLEERE H. 1978: "Roman harbours in Britain south of Hadrian's wall," in J. du Plat Taylor, H. Cleere, eds., *Roman Shipping and Trade* (London).
- COLLOMBIER, A. M. 1987: "Modifications des lignes de rivage et ports antiques de Chypre: état de la question," *Colloques internationaux C.N.R.S., Déplacements des lignes de rivage en Méditerranée* (Paris), 159-72, esp. 167-8.
- DASZEWSKI, W. A. 1981: "Port glowny i przystnie pomocnicze w Nea Paphos w swietle obserwacji podwodnych," (The main harbour and auxiliary harbours in Nea Paphos in light of underwater observations), *Meander* 6, 327-36.
- DU PLAT TAYLOR, J. 1980: "Excavations at Ayios Philon, the ancient Carpasia, Part I: The Classical to Roman periods," *RDAC*, 152-216.
- DU PLAT TAYLOR, A.H.S. MEGAW 1981: "Excavations at Ayios Philon, the ancient Carpasia, Part II: The Early Christian buildings," *RDAC*, 209-50.
- EMPEREUR, J. Y. 1985: "Rapport sur les travaux de l'École Française à Amathonte de Chypre en 1984: le port," *BCH* 109, 984-9.
- EMPEREUR, J. Y., C. VERLINDEN 1987: "The underwater excavation at the ancient port of Amathus in Cyprus," *International Journal of Nautical Archaeology* 16.1, 7-18
- ENVIG, O. T., P. ÅSTRÖM 1975: *Hala Sultan Tekke II: The Cape Kiti Survey, an Underwater Survey*, (SIMA 45:2) (Göteborg).
- ENVIG, O. T., M. BEICHMANN 1984: "Underwater activities and the situation at Cape Kiti, Cyprus," *Opuscula Atheniensia* IX, 181-6.
- FEJFER, J., H. E. MATHIESEN, T. BEKKER-NIELSEN, *et al.*, 1995: *Ancient Akamas: Settlement and Environment* I (Aarhus).
- FLEMMING, N. C. 1974: "Report of preliminary underwater investigations at Salamis, Cyprus," *RDAC*, 163-73.
- FROST, HONOR 1971: "Anchors, the potsherds of marine archaeology: on the recording of pierced stones from the Mediterranean," *Proceedings of the Twenty-third Symposium of the Colston Research Society, Bristol, April 4-8, 1971*, (Colston Papers XXIII), 402.
- GIANGRANDE, C., G. Richards, D. KENNET J. ADAMS 1987: "Cyprus underwater survey, 1983-1984, a preliminary report," *RDAC*, 185-98.
- GRACE, V. 1979: *Amphoras and the Ancient Wine Trade*, rev. ed. (Princeton).
- GREEN, J. N. 1969: *Cape Andreas Expedition* (Oxford).
- 1973: "An underwater archaeological survey of Cape Andreas, Cyprus; 1969-1970: a preliminary report," *Marine Archaeology*, D.J. Blackman, ed., 141-78 (London).
- HADJISAVVAS, S. 1983: "New light on the history of the Ayia Napa region," *RDAC*, 315-8.
- HAUBEN, H. 1987: "Cyprus and the Ptolemaic navy," *RDAC*, 213-26.

- HAYES, J. W. 1967: "Cypriot sigillata," *RDAC*, 65-77, esp. 74-5.
 — 1972: *Late Roman Pottery* (London), 371-2, 419-20.
 — 1991: *Paphos III. The Hellenistic and Roman Pottery* (Nicosia).
- HILL, G. F. 1940: *A History of Cyprus*, Vol. I (London).
- HOGARTH, D. G. 1889: *Devia Cypria* (Oxford).
- HOHLFELDER, R. L., J. R. LEONARD 1993: "Underwater explorations at Paphos, Cyprus: the 1991 preliminary survey," *ASOR Annual* 51, 45-62.
- LEHMANN-HARTLEBEN, K. 1923: "Die antiken Hafenanlagen des Mittelmeeres," *Klio*, Beiheft 14.
- LEONARD, J. R. 1995: "The Anchorage at Kioni", in *Ancient Akamas: Settlement and Environment I*, J. Fejfer, ed. (Aarhus) 133-170.
- LEONARD, J. R., R. L. HOHLFELDER 1993: "Paphos harbour, past and present: the 1991-1992 underwater survey," *RDAC*, 365-79.
- MAHONEY, P. J. B. 1988: *Mediterranean Pilot*, V (Taunton).
- MÜLLER, C. 1855: *Geographi Graeci Minores*, I (Paris).
- MITFORD, T. B. 1980: "Roman Cyprus," *Aufstieg und Niedergang der Römischen Welt*, II.7.2, 1285-384.
- MLYNARCZYK, J. 1990: *Nea Paphos in the Hellenistic Period*, *Nea Paphos III*, Polish Excavations (Warsaw).
- MOREL, S. W. 1960: *The Geology and Mineral Resources of the Agros-Akrotiri Area; Part II: The Geology and Mineral Resources of the Apsiou-Akrotiri Area*, (Geol. Surv. Dept., Memoir No. 7). (Nicosia).
- MORRIS, C. E., A. A. D. PEATFIELD 1987: "Pottery from the Cyprus underwater survey, 1983", *RDAC*, 199-212.
- NICOLAOU, K. 1966a: "The topography of Nea Paphos, *Mèlanges Offerts à K. Michalowski*, M.-L. Bernhard, ed. (Warsaw), 561-601.
 — 1966b: «Ἀρχαῖοι Λιμένες ἐν Κύπρῳ», *Δελτίον Τμήματος Πολιτιστικῆς Ἀναπτύξεως Ὑπουργείου Παιδείας* 6-7, 95-9.
 — 1976a: The Historical Topography of Kition, (*SIMA* 43) (Göteborg).
 — 1976b: "Ancient fish-tanks at Lapithos, Cyprus," *IJNA*, 5.2, 133-41.
- ORPHANOS, P. I. 1980: "Practical aspects of carob cultivation in Cyprus," *Portugaliae Acta Biologica*, A. XVI.1-4, (Lisboa), 221-8.
- ORPHANOS, P. I., J. PAPAConstantinou 1969: "The Carob varieties of Cyprus," *Technical Bulletin* 5 (Nicosia).
- PIRAZZOLI, P. A., J. AUSSEIL-BADIE, P. GIRESSE, E. HADJIDAKI, M. ARNOLD 1992: "Historical environmental changes at Phalasarna harbour, West Crete," *Geoarchaeology*, 7.4, 371-92.
- POTTER, D. Ms.: "Roman Cyprus", forthcoming from Makarios Foundation (Nicosia). Original manuscript provided by kindness of the author.
- QUINN, A. De F. 1961: *Design and Construction of Ports and Maritime Structures* (New York).

- RICKMAN, G. E. 1988: "Towards a study of Roman ports," *Harbor Archaeology: Proceedings of the First International Workshop on Ancient Mediterranean Harbors. Caesarea Martima, 24-28.6.83* (BAR International Series 257) (Oxford/Haifa), 105-113.
- RILEY, J. A. 1982: "The coarse pottery from Berenice," *Excavations at Sidi Khrebish Benghazi (Berenice) II*, Suppl. to *Libya Antiqua* 5.2 (Tripoli), 91-449.
- ROBINSON, H. S. 1959: *Athenian Agora V: Pottery of the Roman Period* (Princeton).
- TOUMAZIS, A., L. ATHANASIADOU, A. DIMITROPOULOS Ms.: "Sea currents in Limassol Bay," paper presented at the Marine Geology Seminar, Nicosia, December 1992 (forthcoming).
- WALLACE, P., A. G. ORPHANIDES, eds. 1990: *Sources for the History of Cyprus, I, Greek and Latin Texts to the Third Century A.D.* (Albany, N.Y.; Nicosia).
- WILL, E. L. 1987: "The Roman amphoras," in A.M. McCann, et. al., *The Roman Port and Fishery of Cosa* (Princeton), 171-220.
- WILLIAMS, C. 1989: *Anemurium: The Roman and Byzantine Pottery* (Toronto).
- WILLIAMS, D. F. 1987: "Roman amphorae from Kourion, Cyprus" *RDAC*, 235-8.
- YON, M. 1990: "Chronique des fouilles et découvertes archéologiques à Chypre en 1989," A. Papageorghiou, ed., *BCH* 114, 962-7, esp. 965.
- ZEMER, A. 1977: *Storage Jars in Ancient Sea Trade* (Haifa).